REMARKS/ARGUMENTS

In the Office action dated March 27, 2003, all of the claims (1 - 31) were rejected under 35 U.S.C. § 103. By this amendment, Applicants have amended claims 1 - 4, 7 - 15, 20 and 21 and added claims 32 - 37. Accordingly, claims 1 - 37 are now pending in this application. Claims 1, 13 and 20 are independent claims.

Regarding independent claim 1, the cited references, considered either independently or in combination, do not teach or suggest a transceiver comprising a "at least one coupling circuit" that "continuously couples, with a substantially constant impedance, the at least one transmitter output to the at least one receiver input."

Regarding independent claim 13, the cited references, considered either independently or in combination, do not teach or suggest a method of "continuously coupling, with a substantially constant impedance, the transmitter output to the receiver input."

Regarding independent claim 20, the cited references, considered either independently or in combination, do not teach or suggest a transceiver comprising "a coupling circuit for continuously coupling, with a substantially constant impedance, the transmitter output to the receiver input."

Accordingly, Applicants submit that independent claims 1, 13 and 20 and the claims that depend on them are not obvious over the cited art.

Discussion of Independent Claim 1

Independent claim 1 recites, in part:

"coupling circuit;"

"transmitter output coupled to . . . the first node of . . . coupling circuit;" and

"receiver input coupled to . . . the second node of . . . coupling circuit;"

"wherein the . . . coupling circuit continuously couples, with a substantially constant impedance, the . . . transmitter output to the . . . receiver input."

The invention of claim 1 includes a coupling circuit to which the transmitter output and the receiver input are coupled. The coupling circuit continuously couples the transmitter output to the receiver input. Moreover, the impedance the coupling circuit presents to the transmitter output or the receiver input remains substantially constant regardless of whether, for example, the transceiver is transmitting or receiving.

As set forth in dependent claim 33 the coupling circuit may comprise a capacitor. As the capacitor is a passive circuit, its impedance will not change significantly when the transceiver is transmitting and receiving. The transceiver will operate at similar frequencies when transmitting and receiving. Thus, the impedance of the capacitor, which is a function of the frequency, will not change significantly when the transceiver switches between transmitting and receiving.

Thus, the coupling circuit may continuously couple the transmitter output to the receiver input regardless of whether,

for example, the transceiver is transmitting or receiving. As set forth in dependent claim 32: "the coupling circuit presents a substantially constant impedance to the . . . transmitter output or to the . . . receiver input when the transmitter is enabled and the receiver is disabled and when the transmitter is disabled and the receiver is enabled."

That is, the coupling circuit may present a substantially constant impedance to the transmitter output when 1) the transmitter is enabled and the receiver is disabled; and when 2) the transmitter is disabled and the receiver is enabled.

In addition, the coupling circuit may present a substantially constant impedance to the receiver input when 1) the transmitter is enabled and the receiver is disabled; and when 2) the transmitter is disabled and the receiver is enabled.

The claimed coupling circuit enables the receiver and the transmitter to be coupled to the antenna without having to selectively couple and uncouple either of them from one another or the antenna. This provides an advantage whereby relatively expensive and bulky switches are not needed in the transceiver.

The cited references, considered either independently or in combination, do not teach or suggest the invention of claim 1. Three references were discussed in the Office action dated March 27, 2003. Each of these references will be treated in turn.

Priniski et al. discloses the use of a resonant circuit 32 between the transmitter and receiver. In Priniski et al., the input 42 to the receiver 44 connects to the node 40 while the output of the transmitter connects to the node 30. Located between the nodes 30 and 40 is, in essence, a high impedance

switch 32 that is manually controlled by a switch 60. This is explained in the Priniski et al. specification beginning at column 2, line 64: "On activation to the transmit mode, push-to-talk switch 60 is suppressed whereby semiconductor diode 48 is forward biased to a low impedance state. Thus, the output port 40 of high pass filter 32 is coupled through capacitor 50 at or near the low impedance ground potential. This causes the capacitor 36 to resonate with inductor 38 whereby a high impedance is reflected to the input port 30 of the high pass filter 32."

The circuit 32 in Priniski et al. couples the transmitter 62 to the receiver 44. In contrast with the invention of claim 1, however, the impedance of the coupling circuit 32 changes significantly depending on whether the transceiver is transmitting or receiving. Thus, Priniski et al. does not teach or suggest the invention of claim 1.

In Figures 3 - 6 of Rucki et al. switches S1 - S4 couple the PA 303 associated with the transmitter 302 to the LNA 308 associated with the receiver 307. The transmitter and receiver in Rucki et al. are selectively coupled to one another and to the antenna via the switches S1 - S4, depending on the current mode of operation. Thus Rucki et al. does not teach or suggest "at least one coupling circuit continuously couples, with a substantially constant impedance, the at least one transmitter output to the at least one receiver input."

Burgess discloses a transceiver with coupling circuit that includes PIN diodes 15 and 16 or 15a and 15b. The PIN diodes are selectively biased and unbiased to provide a low impedance

path or high impedance path, respectively, between the transmitter and the receiver. This selection is based on whether the transceiver is currently transmitting or receiving a signal. Thus, the coupling circuit in Burgess provides a substantially different impedance to the transmitter and receiver depending on whether the transceiver is currently transmitting or receiving a signal.

Accordingly, Burgess does not teach or suggest "at least one coupling circuit continuously couples, with a substantially constant impedance, the at least one transmitter output to the at least one receiver input."

In summary, all of the cited references disclose circuits that actively control the coupling between the transmitter and the receiver to selectively change the impedance the coupling presents to the transmitter and the receiver. This selection is based on the current mode of operation of the transceiver. To this end, these references teach the use of bulky switches and/or power and space consuming filters and PIN diodes.

The claimed invention eliminates the need for these relatively expensive, bulky and/or power consuming active controls through the use of circuits that enable continuous coupling of the transmitter and the receiver. As discussed above, these circuits are not taught or suggested by any of the cited references, considered either independently or in combination.

Accordingly, Applicants respectfully submit that independent claim 1 and claims 2 - 12 and 32 - 33 depending on claim 1 are not obvious in view of these references.

Discussion of Independent Claim 13

Independent claim 13 recites, in part: "continuously coupling, with a substantially constant impedance, the transmitter output to the receiver input."

For reasons similar to those discussed above in conjunction with independent claim 1, the cited references do not teach or suggest "continuously coupling, with a substantially constant impedance, the transmitter output to the receiver input."

Accordingly, Applicants respectfully submit that independent claim 13 and claims 14 - 19 and 34 - 35 depending on claim 13 are not obvious in view of these references.

Discussion of Independent Claim 20

Independent claim 20 recites, in part: "a coupling circuit for continuously coupling, with a substantially constant impedance, the transmitter output to the receiver input."

For reasons similar to those discussed above in conjunction with independent claim 1, the cited references do not teach or suggest "a coupling circuit for continuously coupling, with a substantially constant impedance, the transmitter output to the receiver input." Accordingly, Applicants respectfully submit that independent claim 20 and claims 21 - 31 and 36 - 37 depending on claim 20 are not obvious in view of these references.

CONCLUSION

In view of the above, Applicants submit that claims 1 - 36 are in condition for allowance. Accordingly, Applicants respectfully request that the application be passed to issue.

Respectfully submitted,

CHRISTIE, PARKER & HALE, LLP

By _____

Stephen D. Burbach
Reg. No. 40,285
626/795-9900

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